LIQUID-BASED CYTOLOGY FOR THYROID FNA

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Dr. Cibas has no conflict of interest.
Question: Is there an optimal method for preparing thyroid FNAs?

- A variety of prep methods are available:
  - smears
  - “liquid-based cytology (LBC)”
  - cell blocks
- Can be used alone or in combination
- See handout for Bethesda conference consensus statement and refs.
Strong advocates of one or another method...

- Confession: I’m a big advocate for LBC for thyroid.
- We have been using LBC alone for thyroids for >20 years.
- Our routine: just one ThinPrep slide; if needed, a cell block is made from residual fluid.
Smears

- Advantages:
  - ease of preparation
  - no need for special instrumentation
  - permit on-site evaluation of adequacy

Courtesy: J. Abele
Smears

- Disadvantages
  - Proper technique not self-evident: needs to be learned and practiced
  - Obscuring blood
  - Usually at least 6 slides – can be tedious and time-consuming to screen
Liquid-Based Cytology

- Needle rinsed in transport solution
- Delivered to lab in capped vial
- Variety of methods:
  - ThinPrep
  - SurePath
  - Cytospin
Liquid-Based Cytology

- Advantages:
  - reduced blood
  - consistency of well-fixed slides
  - fewer slides (1 vs. 6, decreased screening time)
Liquid-Based Cytology: Example

- Three passes per nodule, all in one tube of CytoLyt
Liquid-Based Cytology: Example

- Resuspend in PreservCyt and let sit 20 mins. at room temp.
Liquid-Based Cytology

Benign thyroid nodule with “folded tissue paper colloid”

Papillary CA
Liquid-Based Cytology

Benign thyroid nodule

Papillary CA
Technical Tips: ThinPrep

- If short transit time to lab: collect sample in CytoLyt
- If long transit time anticipated to lab: collect sample in PreservCyt
- If sample collected in CytoLyt, resuspend in PreservCyt and incubate at room temp. for at least 20 mins.
Liquid-Based Cytology

- Disadvantages
  - Does not permit on-site evaluation
  - Only for Papanicolaou staining, not Romanowsky
  - Minor morphologic differences require familiarity

- Myths
  - “You can’t see colloid”
  - “There are fewer intranuclear pseudoinclusions”
# Efficacy of Different Preparation Methods

<table>
<thead>
<tr>
<th>Study</th>
<th>Cases (n)</th>
<th>Prep method</th>
<th>% Insufficient</th>
<th>FN (%)*</th>
<th>FP (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gharib et al, 1993</td>
<td>10,971</td>
<td>smears</td>
<td>21</td>
<td>2.4</td>
<td>0.7</td>
</tr>
<tr>
<td>Yoder et al, 2006</td>
<td>1,043</td>
<td>smears +LBC</td>
<td>5</td>
<td>5.1</td>
<td>0</td>
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<tr>
<td>Yang et al, 2007</td>
<td>4,703</td>
<td>smears</td>
<td>10</td>
<td>7.3</td>
<td>1.4</td>
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<tr>
<td>Yassa et al, 2007</td>
<td>3,589</td>
<td>LBC</td>
<td>13</td>
<td>1.6</td>
<td>2.6**</td>
</tr>
</tbody>
</table>

*includes only cases with histologic follow-up
** 3 FAs, 1 HTN
A variety of prep methods available, each with advantages and disadvantages.

No method clearly superior to any other. If used properly, any of the methods described is acceptable and can yield excellent results.

The method (or combination of methods) can be tailored to the needs and preferences of the individuals who obtain the sample and the laboratory that processes it.